Translation

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Form PCT/IPEA/416
R 43449		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/AT2004/000152	04.05.2004	03.07.2003

International Patent Classification (IPC) or national classification and IPC

B23K9/133, B23K9/12, B23K9/28

Applicant

FRONIUS INTERNATIONAL GMBH

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 8 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

   a. ☐ *(sent to the applicant and to the International Bureau)* a total of _____ sheets, as follows:

      ☐ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s))

      _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☒	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☒	Box No. VIII	Certain observations on the international application

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

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Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on translations from the original language into the following language _____, which is the language of a translation furnished for the purposes of:

☐ international search (Rule 12.3 and 23.1(b))

☐ publication of the international application (Rule 12.4)

☐ international preliminary examination (Rule 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

☐ the international application as originally filed/furnished

☒ the description:

pages 1-15 as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☒ the claims:

nos. 1-12 as originally filed/furnished

nos.* _____ as amended (together with any statement) under Article 19

nos.* _____ received by this Authority on _____

nos.* _____ received by this Authority on _____

☒ the drawings:

sheets 1-8 as originally filed/furnished

sheets* _____ received by this Authority on _____

sheets* _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing *(specify)*: _____

☐ any table(s) related to sequence listing *(specify)*: _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages _____

☐ the claims, nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing *(specify)*: _____

☐ any table(s) related to sequence listing *(specify)*: _____

* *If item 4 applies, some or all of those sheets may be marked "superseded."*

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Box No. II Priority

1. ☐ This report has been established as if no priority had been claimed due to the failure to furnish within the prescribed time limit the requested:

   ☐ copy of the earlier application whose priority has been claimed (Rule 66.7(a)).

   ☐ translation of the earlier application whose priority has been claimed (Rule 66.7(b)).

2. ☒ This report has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rule 64.1). Thus for the purposes of this report, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	2-9, 12	YES
	Claims	1, 10-11	NO
Inventive step (IS)	Claims	4-6, 12	YES
	Claims	1-3, 7-11	NO
Industrial applicability (IA)	Claims	1-12	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

1. Citations

Reference is made to the following documents:

D1: US-A-4 837 420 (E.K.J. NIINIVAARA) 6 June 1989 (1989-06-06)

D2: WO 01/38034 A (FRONIUS SCHWEISSMASCHEN PRODUKTION GMBH & CO. KG; J. ARTELSMAIR ET AL) 31 May 2001 (2001-05-31)

D3: US-A-3 693 858 (ARAYA TAKESHI ET AL) 26 September 1972 (1972-09-26)

D4: DE 43 20 405 A (FRAUNHOFER GES FORSCHUNG) 22 December 1994 (1994-12-22)

2. Claims 1-12

D1 discloses (the references in parentheses relate to said document) a welding torch as per the preamble of claim 1. In addition, D1 discloses that the wire buffer store (space between the rollers 24-25 and the centre of the nozzle 7; figure 1; see also Box VIII, point 2 for the exact meaning of a buffer store) is arranged immediately

after the region of the connection of the tube assembly (end of the nozzle 7) inside the torch body (figure 1) and that the tube assembly (end of the nozzle 7; figure 1) is arranged at an angle of up to 90° relative to the central axis (in figure 1, shown by wire 1) of the welding torch. The subject matter of claim 1 is therefore not novel (PCT Article 33(2)).

In any case, D2 discloses a torch (figure 8 and corresponding part of the description) from which the subject matter of claim 1 differs in that the wire buffer store is arranged immediately after the region of the connection of the tube assembly inside the torch body. This allows a more compact design of the torch.

The solution proposed in claim 1 of the present application cannot be deemed inventive for the following reasons (PCT Article 33(3)):

a- D2 indeed describes a torch wherein the sensor (31) simultaneously also forms a wire buffer store (see Box VIII, point 2: the sensor defines an interior space in which the wire can move freely) in which the wire can follow a curved course (figure 4). If the wire touches the sensor pipe, the speed of one of the wire feed devices (29, 34) alters such that the wire no longer comes into contact with the sensor pipe. D2 already describes the possibility of integrating this sensor/wire buffer store in

the torch.

b- a person skilled in the art, without thereby being inventive, would place this sensor/wire buffer store either before the wire feed device (29) integrated in the torch, as is shown in figure 8 of D2, or after this wire feed device and before the tube assembly (figure 8) mounted at the end of the torch (10).

Dependent claims 2-3 and 7-11 do not contain any features which, in combination with the features of any claim to which they refer, meet the PCT novelty and inventive step requirements (PCT Article 33(2) and (3)); see D1 for claims 10-11; see D2 for claims 2-3 (when the wire buffer store also acts as the sensor); see D3 for claims 7-9.

3. Observations

The combination of features contained as a whole in dependent claims 1 and 3-5 is neither known nor obvious from the available prior art. It is therefore proposed that a new independent claim be drafted which includes these features. D3, which is considered the closest prior art, discloses (figures 3-4) a welding torch from which the subject matter of claim 1 differs in that a wire buffer store is arranged immediately after the region of the connection of the tube assembly inside the torch body, whereas the wire core is arranged in the end region in the torch body so as to be freely displaceable in the longitudinal

Box No. V — Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

direction, wherein a sensor for detecting the movement of the wire is arranged in the freely displaceable end region of the wire core and in front of a drive unit arranged in the torch.

The problem addressed by the present invention can therefore be considered that of producing a welding torch of very simple and compact design and in which the dynamic behaviour of the wire feed is improved. The solution to this problem proposed in the combination of claims 1 and 3-5 of the application involves an inventive step (PCT Article 33(3)) since none of the documents cited in this international preliminary report on patentability describes such an arrangement of a wire buffer store, a wire and a sensor (see Box V, point 2 for more details concerning documents D1 and D2).

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Box No. VIII **Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

1. Since it is not permitted to combine previous claims in a reference (PCT Rule 6.4(a)), the expression "**or more**" should be deleted from claims 4 and 7-12.

2. Claim 1 is not clear (PCT Article 6), since claim 1 does actually specify that the welding torch contains a wire buffer store that is arranged directly after the region of the connection of the tube assembly inside the torch body. However, in such a general definition of a wire buffer store, there are also simple spaces in a torch which allow the wire to move freely, i.e. a wire buffer store can only be a free space within a torch though which the wire passes.

   In this international preliminary report on patentability, claim 1 is examined in accordance with this general definition of a wire buffer store (see Box V.2).

3. Expressions such as "in particular" do not bring about any restriction in the scope of protection sought by claim 1, i.e. the feature defined after the words "in particular" in claim 1 (for different wire feed speeds or a forwards or reverse wire feed) must be considered entirely optional (see Box V.2).